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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/796,225	03/09/2004	Takahisa Mizuta	51732/DBP/Y35	2704

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EXAMINER	
DHARIA, PRABODH M	
ART UNIT	**PAPER NUMBER**
2629	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/16/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/796,225	MIZUTA, TAKAHISA	
	Examiner	Art Unit	
	Prabodh M. Dharia	2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 March 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-34* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-34* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *09 March 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *05-11-05,08-19-05,12-12-05*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

2. The information disclosure statement (IDS) submitted on 05-11-2005,08-19-2005 and 12-12-2005 are in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

3. **Status:** Please all replies and correspondence should be addressed to examiner's new art unit 2629. Receipt is acknowledged of papers submitted on 03-09-2004 under new application, which have been placed of record in the file. Claims 1-34 are pending in this action.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1-18,28 and 29 are rejected under 35 U.S.C. 102(e) as being anticipated by Higashino et al. (US 7,030,839 B2).

Regarding Claim 1, Higashino et al. a method for driving a plasma display panel (Col. 1, Lines 6-8), paragraph 1) including a plurality of first electrodes and second electrodes provided in parallel on a first substrate (Col. 5, Lines 36-39), and a plurality of third electrodes crossing the first electrodes and second electrodes and being formed on a second substrate (Col. 5, Lines 39-41), wherein a plurality of discharge cells is formed by adjacent first electrodes, second electrodes (Col. 1, Line 65 to Col.2, Line 3), and third electrodes (Col. 1, Line 65 to Col.2, Line 3, Col. 8, Lines 21,22), and wherein a single subfield (Col. 8, Lines 11,12), includes an address period for forming wall charges at a discharge cell to be selected from among the discharge cells and a sustain period for discharging the selected cell (Col. 8, Lines 11-31), the method comprising: in the sustain period: applying a first pulse to a second electrode while a first electrode is established as a first voltage; and alternately applying to the first electrodes and the second electrodes a sustain pulse with a second voltage defined by a voltage difference between the first electrodes and the second electrodes , wherein the second voltage is less than a voltage difference between the first pulse and the first voltage (Col. 8, Line 19 to Col. 10, Line 48, teaches the voltage Vset1 is applied to the sustain electrode; scan pulse with voltage Vscn is applied to the scan electrode; address pulse with voltage Vdata is applied to the address electrode in the address period; voltage Vset1 of the sustain electrode and voltage Vdata of the address electrode are greater than a reference voltage Vscn of the scan electrode is less than the reference voltage; voltage Vdata is a voltage for generating a surface discharge between address electrode and the scan electrode by a difference between voltage Vdata and voltage Vscn; a voltage difference between Vset1 and Vscn is less than a discharge firing voltage between sustain electrode and the scan electrode; therefore a discharge occurs between the address

electrode and the scan electrode by a voltage difference between voltage of the address electrode and voltage of the scan electrode. A discharge occurs between the scan electrode and the sustain electrode by priming the discharge between the address electrode and the scan electrode, it also teaches by maintaining specific voltage across the non-selected line reduces cross talk or reduces priming particles generated due to addressing discharge and reduces occurrence of erroneous addressing).

Regarding Claim 2, Higashino et al. teaches the address period of the next subfield follows the sustain period (Col. 7, Line 63 to Col. 8, Line 6).

Regarding Claim 3, Higashino et al. teaches a discharge occurs at the discharge cell selected in the address period by the first voltage and the first pulse to form a first space charge and the first space charge allows the discharge cell to be discharged by the second voltage (Col. 4, Line 48 to Col. 5, line 3).

Regarding Claim 4, Higashino et al. teaches the second voltage level is less than a discharge firing voltage level between the first electrodes and the second electrodes at a discharge cell that is not selected (Col. 6, Lines 26-51).

Regarding Claim 5, Higashino et al. teaches the sustain pulse has a width such that the sustain pulse may generate and maintain a second space charge after a discharge has occurred in

the selected discharge cell (Col. 10, Lines 27-59).

Regarding Claim 6, Higashino et al. teaches the sustain pulse is applied to the one of the first electrodes and the second electrodes when the second space charge remains in the discharge cell such that the first electrode and the second electrode may be discharged by the second voltage (Col. 10, Lines 27-59).

Regarding Claim 7, Higashino et al. teaches the sustain pulse comprises a second pulse that is applied to the first electrode and alternately has a third voltage and a fourth voltage, and a third pulse that is applied to the second electrode and alternately has a fifth voltage and a sixth voltage, and a difference between the first voltage level and the fifth voltage level and a difference between the sixth voltage level and the fourth voltage level is defined as the second voltage level (Col. 7, Line 63 to Col. 8, Line 6,since each subfield follow the previous, there the difference between voltages required also follow the previous requirement).

Regarding Claim 8, Higashino et al. teaches the first pulse is a square wave with a third voltage level for a predetermined period (please see figure 5, Col. 6, Lines 53-67, Col. 8, Lines 42-44 the start pulse does not have to be rectangular i.e. it could have nay shape), and a difference between the third voltage level and the first voltage level is within a range for generating a discharge between the first electrode and the second electrode together with a voltage formed by the wall charges formed at the selected discharge cell (Col. 6, lines 19-67, Col. 8, Lines 19-57).

Regarding Claim 9, Higashino et al. teaches the predetermined period has an interval during which the charges formed by the discharge between the first and second electrodes may be accumulated at the first and second electrodes, and when the first pulse falls from the third voltage, a discharge occurs in the discharge cell because of the charges accumulated at the first electrodes and second electrodes to form the first space charge (Col. 8, Lines 19-37).

Regarding Claim 10, Higashino et al. teaches the predetermined period has an interval such that the charges formed by the discharge between the first electrodes and second electrodes may remain as the first space charge (Col. 8, Lines 19-37)

Regarding Claim 11, Higashino et al. teaches a voltage difference between the third voltage level and the first voltage level is within a range during which a discharge between the first electrodes and second electrodes cannot occur at the discharge cell that is not selected during the address period (Col. 8, Lines 19-37).

Regarding Claim 12, Higashino et al. teaches the first pulse is a waveform that gradually rises to the third voltage level, a voltage difference between the third voltage level and the first voltage level is a voltage such that it may generate a discharge between the first electrodes and the second electrodes, and when the first pulse falls from the third voltage level, a discharge occurs by the charges accumulated in the first electrodes and the second electrodes caused by the discharge between the first and second electrodes to form the first space charge (Col. 8, Lines

19-37).

Regarding Claim 13, Higashino et al. teaches the first pulse is a linearly rising ramp waveform (Col. 6, Lines 61,62).

Regarding Claim 14, Higashino et al. teaches the first pulse is a curvedly rising round waveform (Col. 6, Lines 66,67)

Regarding Claim 15, Higashino et al. teaches a voltage difference between the third voltage level and the first voltage level is within a range during which a discharge between the first electrodes and the second electrodes cannot occur at the discharge cell that is not selected during the address period (Col. 10, Lines 27-43, Col. 9, Line 49 to Col. 10, Line 5).

Regarding Claim 16, Higashino et al. teaches the sustain pulse has a width such that wall charges may be formed at the first electrodes and the second electrodes after the discharge occurs at the selected discharge cell (Col. 10, Lines 27-43).

Regarding Claim 17, Higashino et al. teaches the second voltage level is within a range for generating a discharge between the first electrodes and the second electrodes together with a voltage caused by the wall charges formed at the first and second electrodes (Col. 10, Lines 14-26).

Regarding Claim 18, Higashino et al. teaches the last pulse applied to one of the first electrodes and the second electrodes in the sustain period has a width such that no wall charges may be formed at the first electrodes and the second electrodes (Col. 10, Lines 49-67).

Regarding Claim 28, Higashino et al. teaches a plasma display panel driving method by forming wall charges at a discharge cell to be selected from among a plurality of discharge cells, and discharging the selected discharge cell, comprising: applying a setup pulse for forming a first space charge at a selected discharge cell to the discharge cell; and establishing the first space charge formed by the setup pulse as a priming element, and applying a sustain pulse with a voltage level of a range for discharging the selected discharge cell to the discharge cell (Page 3, Paragraphs 33-36).

Regarding Claim 29, Higashino et al. teaches the sustain pulse has a width of a range for forming a second space charge after the selected discharge cell is discharged by the sustain pulse, and the second space charge formed by the sustain pulse is set as a priming element, a level of the sustain pulse is converted, and the level-converted sustain pulse is applied to the discharge cell within a range where the second space charges remain so that the selected discharge cell may be discharged (page 1, paragraph 2, Col. 3, paragraphs 33-36).

6. Claims 30 and 31 are rejected under 35 U.S.C. 102(e) as being anticipated by Homma (US 2003/0141824 A1).

Regarding Claim 30, Homma teaches a plasma display panel driving (page 7, paragraph 107, Lines 1,2) method by dividing a frame for realizing video signals into a plurality of subfields (page 7, paragraph 107, Lines 1-7), the plasma display panel including a plurality of discharge cells (page 7, paragraph 100, Lines 1-9), wherein a subfield includes an address period for forming wall charges at a discharge cell to be selected from among the discharge cells (page 10, paragraph 155), and a sustain period for sustaining the selected discharge cell (page 10, paragraph 167) without using a memory function (page 1, paragraph 5,Lines 10-13, , the method comprising: in the sustain period: applying a pulse for discharging the selected discharge cell during the address period; and establishing the discharge as priming, and applying a sustain pulse for alternately sustaining the discharge cell (page 10, paragraphs 164-168).

Regarding Claim 31, Homma teaches an address period of a next subfield follows the sustain period of a subfield (see figure 9, page 10, paragraphs 155,168).

7. Claims 32-34 are rejected under 35 U.S.C. 102(e) as being anticipated by Makino (US 2002/0067127 A1).

Regarding Claim 32, Makino teaches a plasma display panel comprising: a first substrate and a second substrate; a plurality of first electrodes and second electrodes formed in parallel on the first substrate; a plurality of third electrodes crossing the first and second electrodes and being formed on the second substrate; and a driving circuit for sustaining a plurality of discharge cells formed by adjacent first electrodes, second electrodes, and third electrodes, wherein a

frequency of the sustain pulse supplied for sustaining the discharge cell in the driving circuit is greater than 500 KHz (pages 3 and 4, paragraphs 43-47, page 3, paragraph 37 teaches depending on the gas mixture of PDP the sustain frequency can be several mega hertz, i.e. the range of 500Khz to 1Mhz is achievable).

Regarding Claim 33, Makino teaches the frequency has a range from 500 KHz to 1 MHz (page 3, paragraph 37 teaches depending on the gas mixture of PDP the sustain frequency can be several mega hertz, i.e. the range of 500Khz to 1Mhz is achievable).

Regarding Claim 31, Homma teaches the frequency has a range from 700 KHz to 1 MHz (page 3, paragraph 37 teaches depending on the gas mixture of PDP the sustain frequency can be several mega hertz, i.e. the range of 500Khz to 1Mhz is achievable).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. Claim*** rejected under 35 U.S.C. 103(a) as being unpatentable over Higashino et al. (US 7,030,839 B2) as applied to claims 1-18,28 and 29 above, and further in view of Holtslag et al. (US 20020067320 A1).

Regarding Claim 19, Higashino et al. teaches a plasma display panel (Col. 1, Lines 6-8), paragraph 1) including a plurality of first electrodes and second electrodes provided in parallel on a first substrate (Col. 5, Lines 36-39), and a plurality of third electrodes crossing the first electrodes and second electrodes and being formed on a second substrate (Col. 5, Lines 39-41), wherein a plurality of discharge cells is formed by adjacent first electrodes, second electrodes (Col. 1, Line 65 to Col.2, Line 3), and third electrodes (Col. 1, Line 65 to Col.2, Line 3, Col. 8, Lines 21,22), and wherein a single subfield (Col. 8, Lines 11,12), includes an address period for forming wall charges at a discharge cell to be selected from among the discharge cells and a sustain period for discharging the selected cell (Col. 8, Lines 11-31) and a sustain period for discharging the selected discharge cell, wherein the driving circuit applies a setup pulse to a second electrode while maintaining a first electrode at a first voltage, and respectively applies first sustain pulses and second sustain pulses to the first electrodes and the second electrodes during the sustain period, and the setup pulse generates a discharge between the first electrodes and the second electrodes at the selected discharge cell (Col. 8, Line 19 to Col. 10, Line 48, teaches the voltage Vset1 is applied (setup pulse) to the sustain electrode; scan pulse with voltage Vscn is applied to the scan electrode; address pulse with voltage Vdata is applied to the address electrode in the address period; voltage Vset1 of the sustain electrode and voltage Vdata of the address electrode are greater than a reference voltage Vscn of the scan electrode is less than the reference voltage; voltage Vdata is a voltage for generating a surface discharge between address electrode and the scan electrode by a difference between voltage Vdata and voltage Vscn; a voltage difference between Vset1 and Vscn is less than a discharge firing voltage between sustain electrode and the scan electrode; therefore a discharge occurs between the

address electrode and the scan electrode by a voltage difference between voltage of the address electrode and voltage of the scan electrode. A discharge occurs between the selected scan electrode and the sustain electrode by priming the discharge between the address electrode and the scan electrode).

However, Higashino et al. fails to recite or disclose sustain pulses with predetermined frequencies.

However, Holtslag et al. recites and discloses sustain pulses with predetermined frequencies (page 3, paragraph 36, teaches inorder to high resolution display the weight factor each subfield carries predetermines the sustain pulse frequency, therefore the each weight factor predetermined sustain pulse frequency).

The reason to combine Holtslag et al. with Higashino et al. is to be able to achieve a gray scale with weight factor assigned to each subfield, which will produce high resolution bright display

Thus it would have been obvious to one in the ordinary skill in the art at the time of invention was made to incorporate the teaching of Holtslag et al. in the teaching of Higashino et al. to be able to have a PDP or plasma display panel operating with a specific weight factor assigned to a subfield and weight factor predetermines the sustain pulse frequency to achieve appropriate gray scale that will produce high resolution and bright display.

Regarding Claim 20, Higashino et al. teaches the setup pulse has a waveform for generating a discharge between the first electrodes and the second electrodes at the selected discharge cell to form a first space charge, a voltage level difference between the first sustain

pulses and the second sustain pulses when the first sustain pulse has a high-level voltage and a voltage level difference between the second sustain pulses and the first sustain pulses when the second sustain pulse has a high-level voltage are a second voltage level, and the second voltage level is within a range for establishing the first space charge as a priming particle to generate a discharge between the first and second electrodes (Col. 8, Line 19 to Col. 10, Line 48).

Regarding Claim 21, Higashino et al. teaches during the address period: the driving circuit respectively applies fourth and fifth voltages to the second and third electrodes of the discharge cell to be selected while maintaining the first electrode at a third voltage, a voltage difference between the fifth and fourth voltage levels is within a range for generating a discharge between the second and third electrodes, and a voltage difference between the third and fourth voltage levels is within a range for establishing a discharge between the second and third electrodes as priming and generating a discharge between the first and second electrodes (Col. 7, Line 63 to Col. 8, Line 6, and Col. 8, Lines 19-37, since each subfield follow the previous, there the difference between voltages required also follow the previous requirement).

Regarding Claim 22, Higashino et al. teaches the setup pulse is a square wave with a third voltage level (please see figure 5, Col. 6, Lines 53-67, Col. 8, Lines 42-44 the start pulse does not have to be rectangular i.e. any shape), a discharge between the first electrodes and the second electrodes occurs at the selected discharge cell when the square wave rises, wall charges are formed at the first and second electrodes by the discharge between the first electrodes and the second electrodes while the square wave maintains the third voltage level, and a discharge

between the first electrodes and the second electrodes is generated by the wall charges formed at the first electrodes and the second electrodes when the square wave falls (Col. 8, Lines 19-57, Col. 6, Lines 19-67).

Regarding Claim 23, Higashino et al. teaches the setup pulse is a square wave with a third voltage level (please see figure 5, Col. 6, Lines 53-67, Col. 8, Lines 42-44 the start pulse does not have to be rectangular i.e. any shape), and the square wave has a width within a range where the charges formed by the discharge between the first electrodes and the second electrodes may remain as the first space charges at the selected discharge cell (Col. 8, Lines 19-57, Col. 6, Lines 19-67).

Regarding Claim 24, Higashino et al. teaches the setup pulse is a waveform gradually rising to the third voltage level, a voltage difference between the third voltage levels and the first voltage levels is a voltage such that a discharge between the first electrodes and the second electrodes may occur at the selected discharge cell, and a discharge occurs by the charges accumulated at the first electrodes and the second electrodes when the setup pulse falls to form the first space charges (Col. 6, Lines 19-67).

Regarding Claim 25, Higashino et al. teaches a period for forming the second voltage by the first sustain pulses and the second sustain pulses is within a range for forming a second space charge at the discharge cell by the discharge between the first electrodes and the second electrodes, the second space charge is the second voltage formed by the level-converted first

sustain pulses and the second sustain pulses to operate as a priming element for generating a discharge between the first electrodes and the second electrodes, and frequencies of the first sustain pulses and the second sustain pulses are within a range where the second space charges remain such that the second space charges may operate as a priming element of a discharge between the first electrodes and the second electrodes (Col. 10, Lines 28-67, Col. 8, Lines 19-54 where to generate space charges the subfield does not concerned with weight factor of the video signal so freq1uency for the first and second scan pulse would be very close also similar situation occurs in erase pulse)

Regarding Claim 26, Higashino et al. teaches a period for forming the second voltage by the first sustain pulses and the second sustain pulses is within a range for forming wall charges at the first electrodes and the second electrodes by the discharge between the first electrodes and the second electrodes, and a discharge between the first electrodes and the second electrodes occurs by a voltage formed by the wall charges and the second voltage formed by the level-converted first sustain pulses and the second sustain pulses Col. 7, linre65 to Col. 8, Line 6, Col. 10, Line 27-48)

Regarding Claim 27, Higashino et al. teaches the last pulse applied to one of the first electrodes and the second electrodes has a width of a range during which no wall charges are formed at the first electrodes and the second electrodes by the discharge between the first electrodes and the second electrodes, during the sustain period (Col. 10, Lines 27-67).

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Van Heusden et al. (US 2002/0014846 A1) Plasma Display Panel.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Prabodh M. Dharia whose telephone number is 571-272-7668. The examiner can normally be reached on M-F 8AM to 5PM.

12. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

13. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Any response to this action should be mailed to:

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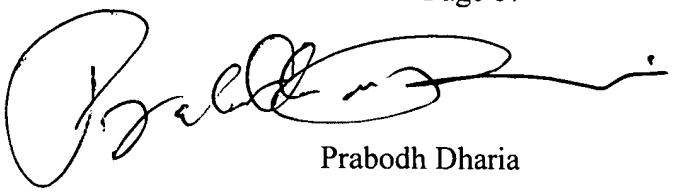

Prabodh Dharia

Partial Signatory Authority

AU 2629

March 12, 2007